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Department of
Agriculture

Federal Grain
Inspection
Service

Annual Report to Congress, 1992



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Authority

The United States Grain Standards Act, as amended, requires the Administrator of the USDA Federal Grain Inspection Service to submit to the Senate and House Committees on Agriculture on December 1 of each year a report on the effectiveness of the official inspection and weighing system for the prior fiscal year, and to develop recommendations for legislative changes to accomplish the objectives of the Act.

The Act also requires the Administrator to submit a summary of valid complaints received from foreign purchasers and prospective purchasers of U.S. grain and of their resolution by the U.S. Department of Agriculture during the prior fiscal year. That summary is included as part of this Annual Report.

Mission

The mission of the Federal Grain Inspection Service is to facilitate the marketing of grain, oilseeds, pulses, rice, and related commodities by establishing descriptive standards and terms; accurately and consistently certifying quality; providing for uniform official inspection and weighing; carrying out assigned regulatory and service responsibilities; and providing the framework for commodity quality improvement incentives to both domestic and foreign buyers.



United States
Department of
Agriculture

Federal Grain
Inspection
Service

P.O. Box 96454
Washington, DC
20090-6454

December 1, 1992

Honorable E (Kika) de la Garza
Chairman, Committee on Agriculture
House of Representatives
Washington, DC 20515

Honorable Patrick J. Leahy
Chairman, Committee on Agriculture,
Nutrition, and Forestry
United States Senate
Washington, DC 20510

Dear Mr. Chairmen:

In compliance with the United States Grain Standards Act, as amended, the Federal Grain Inspection Service (FGIS) is submitting its fiscal year 1992 Annual Report to Congress. This report summarizes the Agency's responsibilities, accomplishments, program activities, and financial status.

During fiscal year 1992, FGIS continued efforts to improve the national grain inspection and weighing system. The Agency's key accomplishments included:

- * providing needed information by implementing new services, such as the official commercial inspection service;
- * addressing the needs of domestic and international customers of U.S. grain by proposing that a statement appear on official certificates when additives, except fumigant applied for insect control, are applied to export grain, at export locations;
- * enhancing the safety of the Nation's food supply by undertaking a pesticide residue testing program, and seeking new means of identifying mycotoxins other than aflatoxin;
- * studying the quality of U.S. grain from export to destination by participating in collaborative studies with international cooperators;
- * establishing U.S. Standards for Canola, the first new grain standard developed under the U.S. Grain Standards Act since 1984, to facilitate the marketing of an increasingly popular oilseed; and
- * ensuring compliance with the U.S. Grain Standards Act and the Agricultural Marketing Act of 1946.



The Federal Grain Inspection Service
is an agency of the
United States Department of Agriculture

Honorable E (Kika) de la Garza
Honorable Patrick J. Leahy

FGIS' operating revenues from fees during fiscal year 1992 were \$28.96 million, with obligations of \$29.25 million, yielding a negative net operating margin of \$290,000. Agency obligations decreased nearly \$1.2 million from fiscal year 1991 levels, revenues decreased by \$138,000, compared to the previous year.

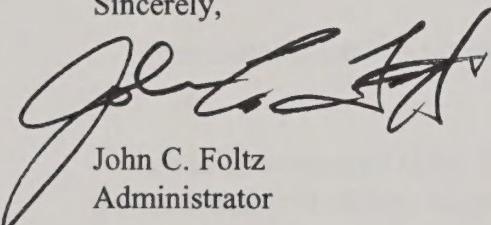
The total revenues included interest of \$188,948 on investments held in reserve. The revolving fund closed the fiscal year with an unobligated balance of \$9.4 million in the trust account.

Administrative and supervision costs represented 20 percent of total program costs, which is below the statutory limit of 40 percent. Appropriated obligations of approximately \$11.2 million, plus revolving fund obligations of \$29.2 million totalled \$40.4 million, \$400,000 under fiscal year 1991 total program obligations. The fee-supported activities ended fiscal year 1992 at 72 percent of the total obligations.

The FGIS Advisory Committee continues to provide valuable advice to the Administrator regarding the implementation of the U.S. Grain Standards Act. During fiscal year 1992, the group met three times to address issues affecting the grain industry and the Agency.

FGIS remains committed to quality and to ensuring that the official grain inspection and weighing system remains second to none.

Sincerely,



John C. Foltz
Administrator

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Italics denote graphics.



The mention of firm names or trade products does not imply that they are endorsed or recommended by the U.S. Department of Agriculture over other firms or similar products.

Outlook 1993

Grain Cleaning Study

In June 1990, the Federal Grain Inspection Service (FGIS) commissioned the USDA Economic Research Service to conduct a 3-year study to determine the costs and benefits of marketing cleaner corn, barley, sorghum, soybeans, and wheat. The study, which cost approximately \$924,000, is part of FGIS' ongoing effort to evaluate how grain standards and inspection procedures, especially as related to grain quality, should interact with the marketplace. The study also is a basis for implementing the requirements of Section 2005 of the Grain Quality Incentives Act of 1990 (7 U.S.C. 71 *et seq.* as amended by Title 20 Public Law No. 101-624).

The study is designed to (1) identify and quantify the benefits and costs of cleaning grain, by geographic area and cleaning method, (2) determine appropriate limits for cleanliness factors based on economic benefits and costs to the grain industry, (3) assess the need to establish new, or revise current, factors relating to grain cleanliness, (4) determine economic losses due to the lack of cleanliness of government stocks, and (5) develop a database on the costs and benefits of improving the cleanliness of grain.

FGIS should receive reports on the benefits and costs of marketing cleaner wheat, corn, and soybeans during fiscal year 1993. Reports on sorghum and barley are expected in late fiscal year 1993 or early in fiscal year 1994. Upon receipt of these reports, FGIS will review the findings and determine if action is needed to amend or revise the grain cleanliness standards.

Reauthorization

Public Law 100-518, enacted October 24, 1988, extended FGIS programs through the end of fiscal year 1993. FGIS has recommended legislation to reauthorize the sunset provisions of the statute to continue the Agency's programs through September 30, 1998.

Wheat Classification

FGIS, the Agricultural Research Service (ARS), the Agricultural Marketing Service (AMS), and the industry-sponsored Wheat Classification Working Group (WCWG) continue to develop an objective wheat classification system. The new system will be based on objective single kernel hardness tests, rather than subjective visual inspections that determine kernel color and morphology.

Through a cooperative agreement with ARS, a single kernel hardness tester (SKHT) suitable for commercial production and sale was developed. Prototype instruments were delivered to FGIS in August 1992 for evaluation.

In 1993, FGIS will evaluate single kernel hardness reproducibility and repeatability under field conditions. During the study, FGIS will collect 500 market samples from various wheat classes over a 10-week period. Five FGIS field offices will be equipped with SKHT prototypes and will conduct analyses of the samples. Data generated will be used to assess the "real world" performance of the prototype instruments and their ability to objectively determine wheat class. AMS will provide statistical support. The WCWG will review the data when the study is completed.

In the 1991 Annual Report to Congress, FGIS anticipated a 1-year market adjustment period, and implementation of an objective classification for hard and soft wheat in 1994. Unexpectedly slow progress in evaluating the SKHT, and insufficient market sample hardness data prompted FGIS to delay the implementation schedule by 1 year. Consequently, allowing for a 1-year market adjustment period, an objective wheat classification system will not be implemented before 1995.

Functions and Responsibilities

The Federal Grain Inspection Service (FGIS) was created by Congress in 1976 to manage the national grain inspection system, initially established in 1916, and to institute a national grain weighing program. The goal of creating a single Federal grain inspection entity was to ensure development and maintenance of uniform U.S. standards, to develop inspection and weighing procedures for grain in domestic and export trade, and to facilitate grain marketing.

FGIS administers uniform, national grain inspection and weighing programs established by the U.S. Grain Standards Act, as amended (hereinafter, the Act). Services under the Act are performed on a fee basis for both export and domestic grain shipments. The Act requires generally that export grain be inspected and weighed, prohibits deceptive practices and criminal acts with respect to the inspection and weighing of grain, and provides penalties for violations.

In administering and enforcing the Act, FGIS:

- * establishes and maintains official U.S. grain standards for barley, canola, corn, flaxseed, oats, rye, sorghum, soybeans, sunflower seed, triticale, wheat, and mixed grain;
- * promotes uniform application of official U.S. grain standards by official inspection personnel;
- * establishes methods and procedures, and approves equipment for the official inspection and weighing¹ of grain;
- * provides official inspection and weighing services at certain U.S. export port locations², and official inspection of U.S. grain at certain export port locations in eastern Canada along the St. Lawrence Seaway;

-
1. Official Inspection. The determination by original inspection, reinspection, and appeal inspection and the certification by official personnel of the kind, class, quality, or condition of grain under standards provided for in the Act; or, the condition of vessels and other carriers or receptacles for the transportation of grain insofar as it may affect the quality of such grain under other criteria approved by the Administrator (the term "officially inspected" shall be construed accordingly).

Official Weighing. (Class X Weighing). The determination and certification by official personnel of the quantity of a lot of grain under standards provided for in the Act, based on the actual performance of weighing or the physical supervision thereof, including the physical inspection and testing for accuracy of the weights and scales, the physical inspection of the premises at which weighing is performed, and the monitoring of the discharge of grain into the elevator or conveyance. (The terms "official weight" and "officially weighed" shall be construed accordingly.)

2. Export Port Locations. Commonly recognized ports of export in the United States or Canada, as determined by the Administrator, from which grain produced in the United States is shipped to any place outside the United States. Such locations include any coastal or border location, or any site in the United States that contains one or more export elevators and is identified by FGIS as an export port location.

- * delegates qualified State agencies to inspect and weigh grain at certain U.S. export port locations;
- * designates qualified State and private agencies to inspect and weigh grain at interior locations;
- * licenses qualified State and private agency personnel to perform inspection and weighing services;
- * provides Federal oversight of the official inspection and weighing of grain by delegated States and designated agencies;
- * provides review inspection services³ of U.S. grain in the United States and at certain export port locations in eastern Canada;
- * investigates, in cooperation with the Office of Inspector General, apparent violations of the Act and initiates appropriate corrective action; and
- monitors the quality and weight of U.S. grain as received at destination ports, and investigates complaints or discrepancies reported by importers.

Mandatory Services

Under provisions of the Act, most grain exported from U.S. export port locations must be officially weighed. A similar requirement exists for inspection, except for grain which is not sold or described by grade. Intercompany-barge grain received at export port locations also must be officially weighed. And, the Act requires that all corn exported from the U.S. be tested for aflatoxin prior to shipment, unless the contract stipulates that testing is not required.

Mandatory official inspection and weighing services are provided by FGIS on a fee basis at 57 export elevators. Eight delegated States provide official services at an additional 22 export elevators under direct FGIS oversight.

Grain exporters shipping less than 15,000 metric tons of grain abroad annually are exempt from mandatory official inspection and weighing requirements. Grain exported by train or truck to Canada or Mexico also is exempt from official inspection and weighing requirements.

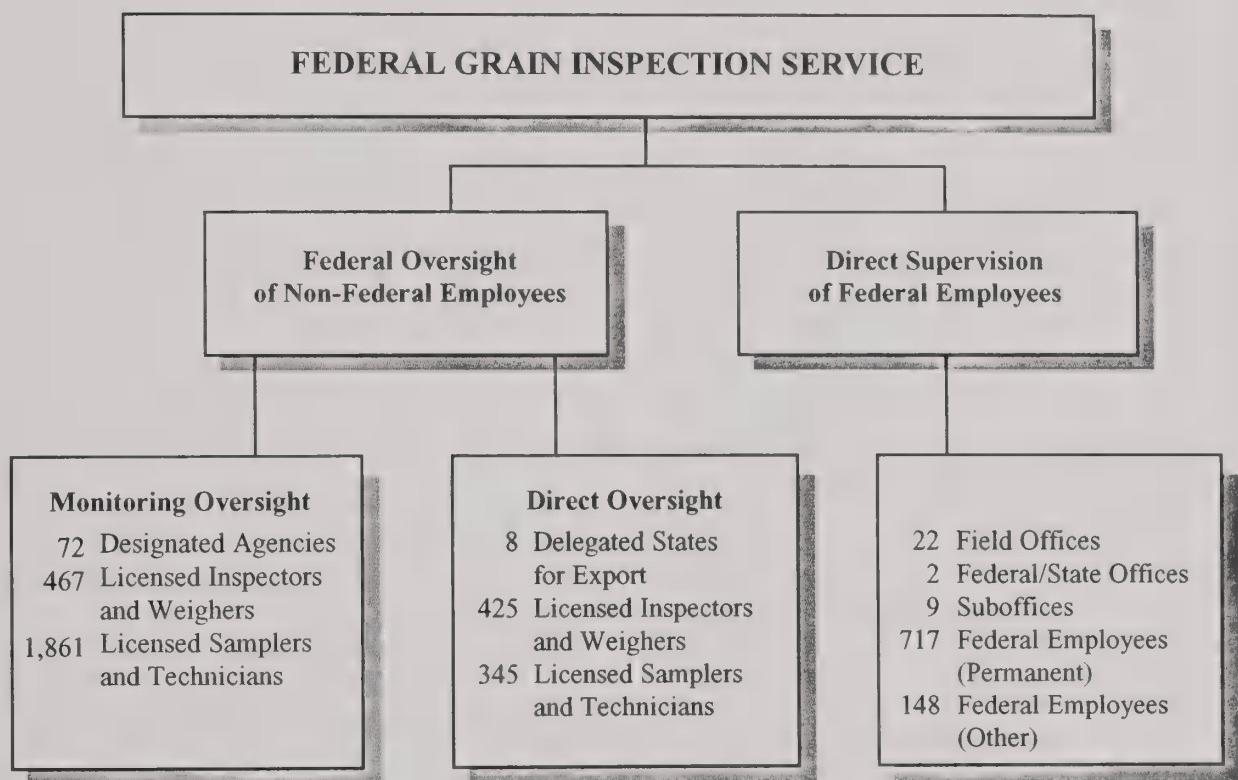
3. Review Inspection Service. A reinspection, appeal inspection, or Board appeal inspection service performed when discrepancies are alleged between the true quality of the grain and the inspection results.

Permissive Services

Official inspection and weighing of U.S. grain in domestic commerce are performed upon request and require payment of a fee by the applicant for services. Domestic inspection and weighing services are provided by 72 designated agencies that employ personnel licensed by FGIS to provide such services in accordance with regulations and instructions. FGIS supervisory and administrative costs have been funded by user fees since October 1, 1981.

Under the Agricultural Marketing Act of 1946 (hereinafter, the "AMA"), FGIS administers and enforces certain inspection and standardization activities related to rice, pulses, lentils, and processed grain products such as flour and corn meal, as well as other agricultural commodities. Services under the AMA are performed upon request on a fee basis for both domestic and export shipments by either FGIS employees or individual contractors, or through cooperative agreements with States.

Oversight Responsibilities

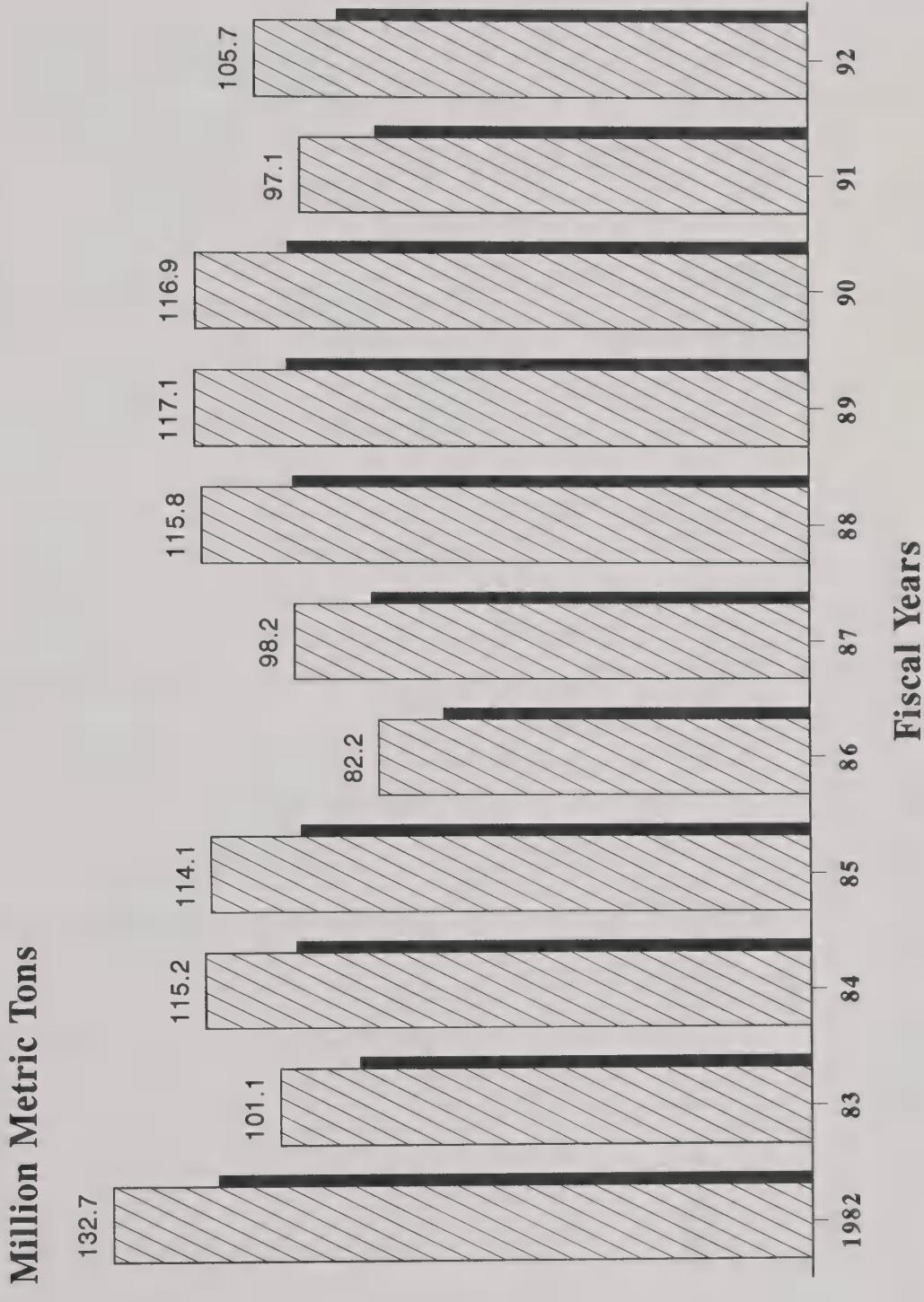


Services by State and Agency Type

State	Federal or Federal/State	Delegated State	Designated State	Designated Private
Alabama		•	•	
Alaska			•	
Arizona				
Arkansas		•*	•	•
California		•*	•	•
Colorado				•
Connecticut				
Delaware				
Florida		•		
Georgia		•	•	
Hawaii				
Idaho		•		•
Illinois		•		•
Indiana				•
Iowa				•
Kansas			•	
Kentucky				•
Louisiana		•	•	
Maine			•	
Maryland		•		
Massachusetts			•	
Michigan		•		•
Minnesota		•	•	
Mississippi		•	•	
Missouri			•	
Montana			•	
Nebraska				•
Nevada				
New Hampshire				
New Jersey				
New Mexico				•
New York			•	
North Carolina			•	
North Dakota			•	
Ohio		•		
Oklahoma		•		
Oregon		•	•	
Pennsylvania				
Rhode Island				
South Carolina		•	•	
South Dakota			•	
Tennessee				
Texas		•		
Utah			•	
Vermont				
Virginia		•	•	
Washington		•*	•	
West Virginia			•	
Wisconsin		•	•	
Wyoming			•	

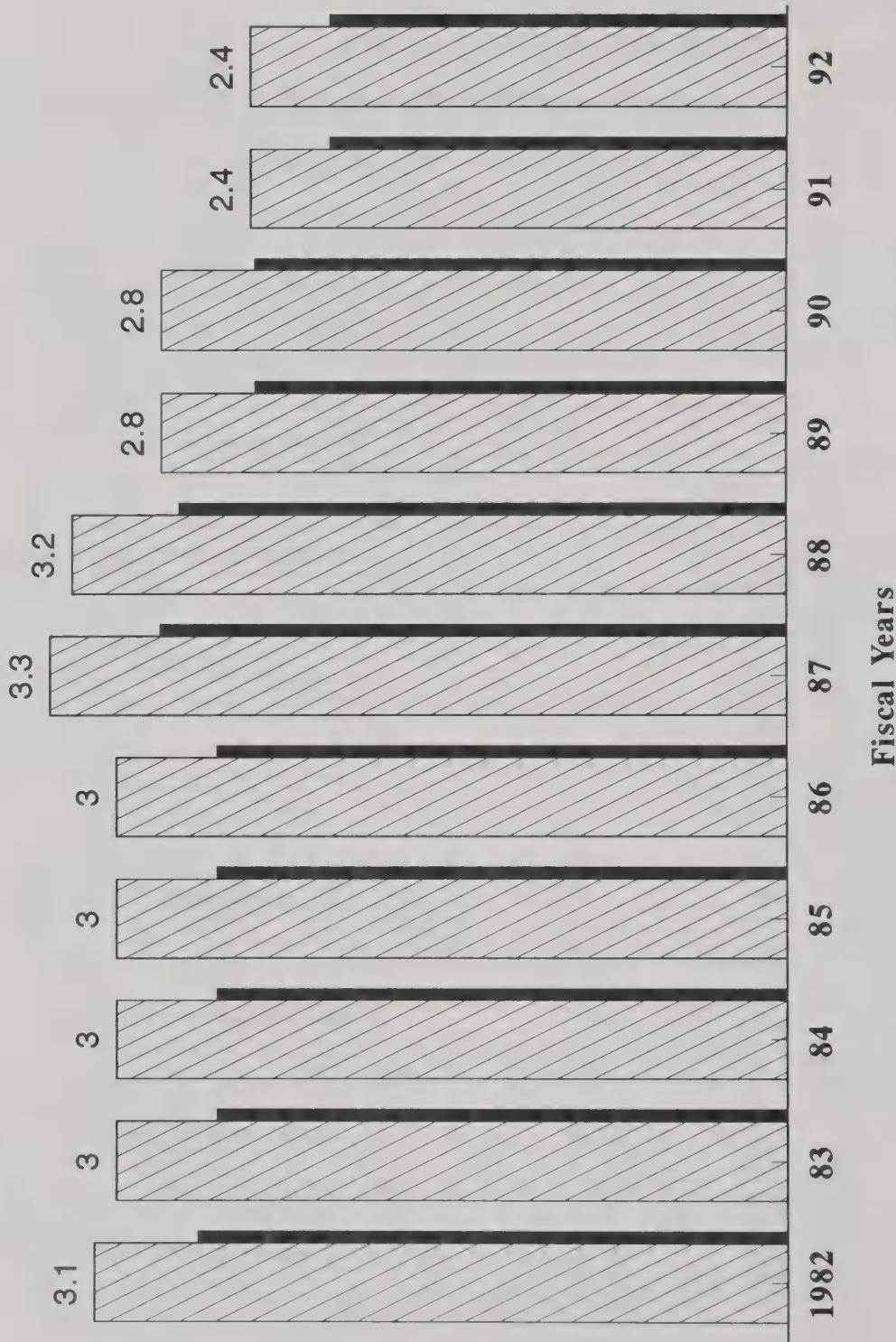
* Federal/State agreement.

U.S. Agricultural Exports-Coarse Grains Wheat, Soybeans, Sunflower and Rice

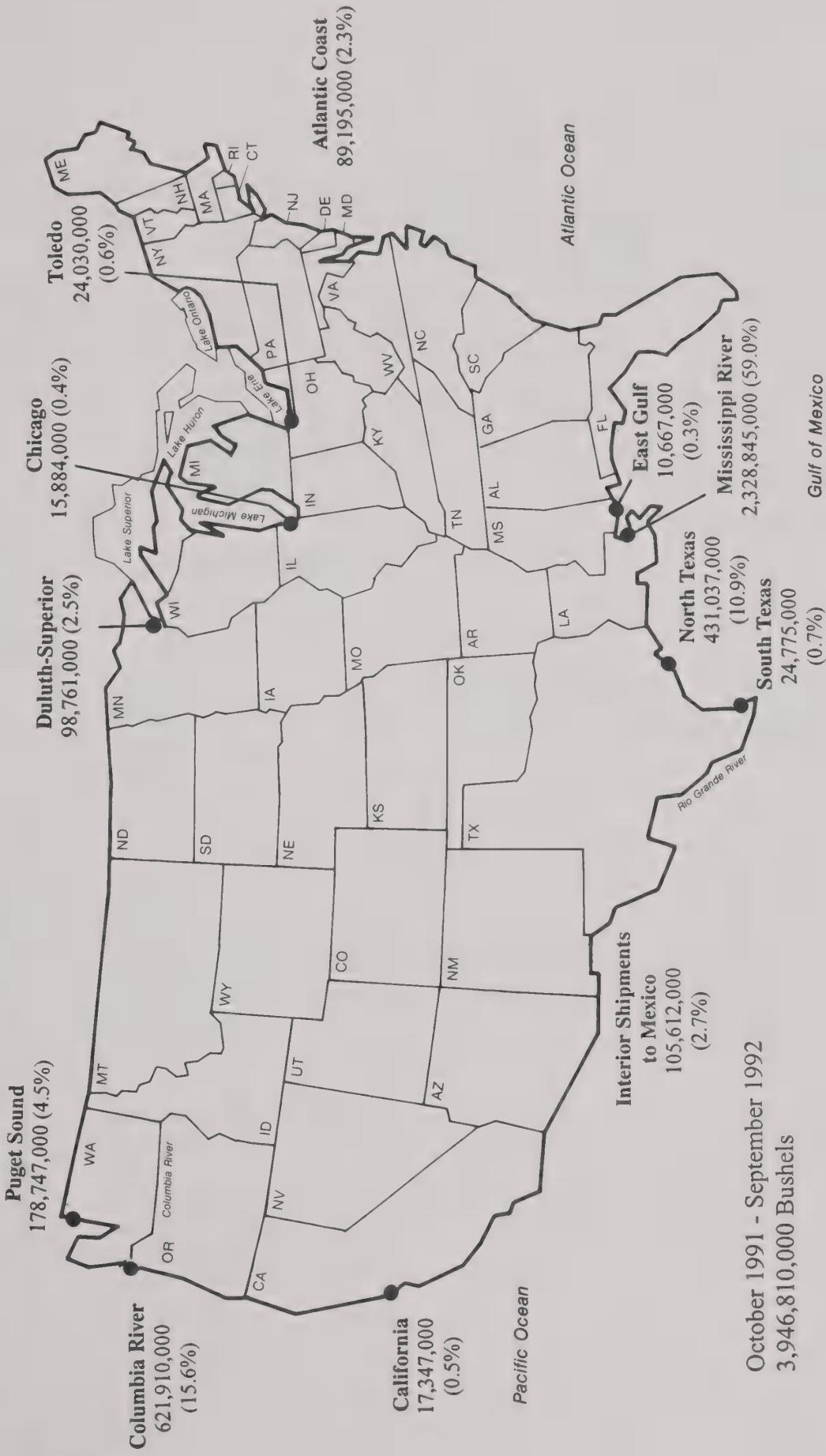


Number of Inspections Performed Under U.S. Grain Standards Act

Millions of Inspections



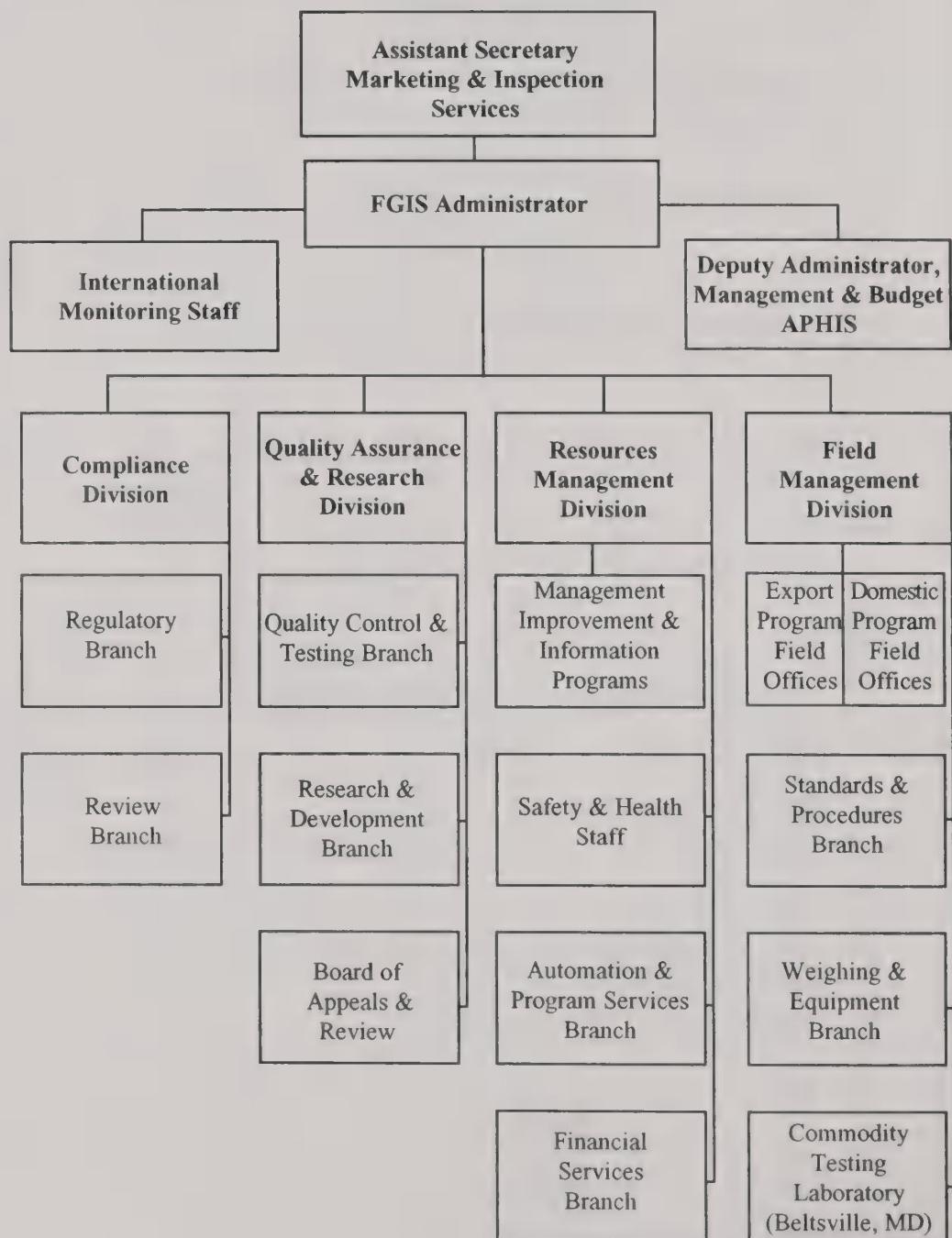
Volume of U.S. Grain Inspected for Export by Area Fiscal Year 1992



Organizational Structure

FGIS is an Agency that reports to the Assistant Secretary for Marketing and Inspection Services, U.S. Department of Agriculture. FGIS is composed of two headquarters units, 22 field offices, 2 Federal/State offices, and 9 suboffices.

Three of the Agency's four headquarters divisions -- Compliance, Field Management, and Resources Management -- are located in Washington, D.C. The fourth -- the Quality Assurance and Research Division -- is located in Kansas City, Missouri.



FGIS Divisions

The **Compliance Division** ensures that the Act, applicable provisions of the AMA, and applicable regulations are implemented accurately and uniformly. The Division:

- evaluates alleged violations and initiates preliminary investigations, and assists USDA's Office of Inspector General on investigations involving criminal violations of the Act and the AMA;
- * initiates enforcement/administrative actions for violations of the Act, applicable provisions of the AMA, and applicable regulations;
- * administers the program for delegating State agencies and designating official agencies to perform official functions, and monitors their performance;
- * reviews and, when appropriate, approves official agency fee schedules;
- * identifies and monitors official agency and licensee conflicts of interest;
- * registers firms that export U.S. grain;
- * conducts management evaluations and technical reviews of FGIS operations and programs, and monitors appropriate corrective actions;
- * responds to audits and surveys of FGIS programs;
- * coordinates litigation proceedings involving FGIS personnel and/or records; and
- * administers the program to ensure that management control and accountability comply with governmental standards.

The **Field Management Division**, the largest division within FGIS, directs and oversees the operation of all FGIS field offices, Federal/State offices, and delegated and designated agencies. The Division also:

- * establishes U.S. standards for grain, rice, and pulses;
- * develops inspection and weighing policies and procedures;
- * performs original inspection and weighing of export grain;
- * monitors the quality of grain as it moves through the market;
- * licenses official agency personnel;
- * samples and inspects processed grain products;
- * oversees the Commodity Testing Laboratory in Beltsville, Maryland;
- * provides quality assurance functions for the USDA Agricultural Stabilization and Conservation Service and the Department of Defense Personnel Support Center; and
- * tests processed grain products for producers, school lunch programs, military rations, and shipments to needy countries throughout the world.

The **Quality Assurance and Research Division** is responsible for research, development, technical training, and quality control programs. The Division:

- * develops new tests and methods for determining grain quality;
- * provides reference standards for FGIS methods and develops new reference standards, as required;
- * develops criteria and recommends specifications for instruments to improve the reliability of grain inspection;
- * develops and maintains an agencywide quality control program covering all aspects of grading and inspection;
- * maintains the uniform application of grain and commodity standards;
- * renders final decisions on inspection appeals; and
- * conducts technical training for field personnel.

The **Resources Management Division** administers programs that provide budget, financial, automation, directives, regulatory, health, safety, and training services to the Agency. The division coordinates, evaluates, and negotiates all resources needed to provide administrative support services for FGIS operations.

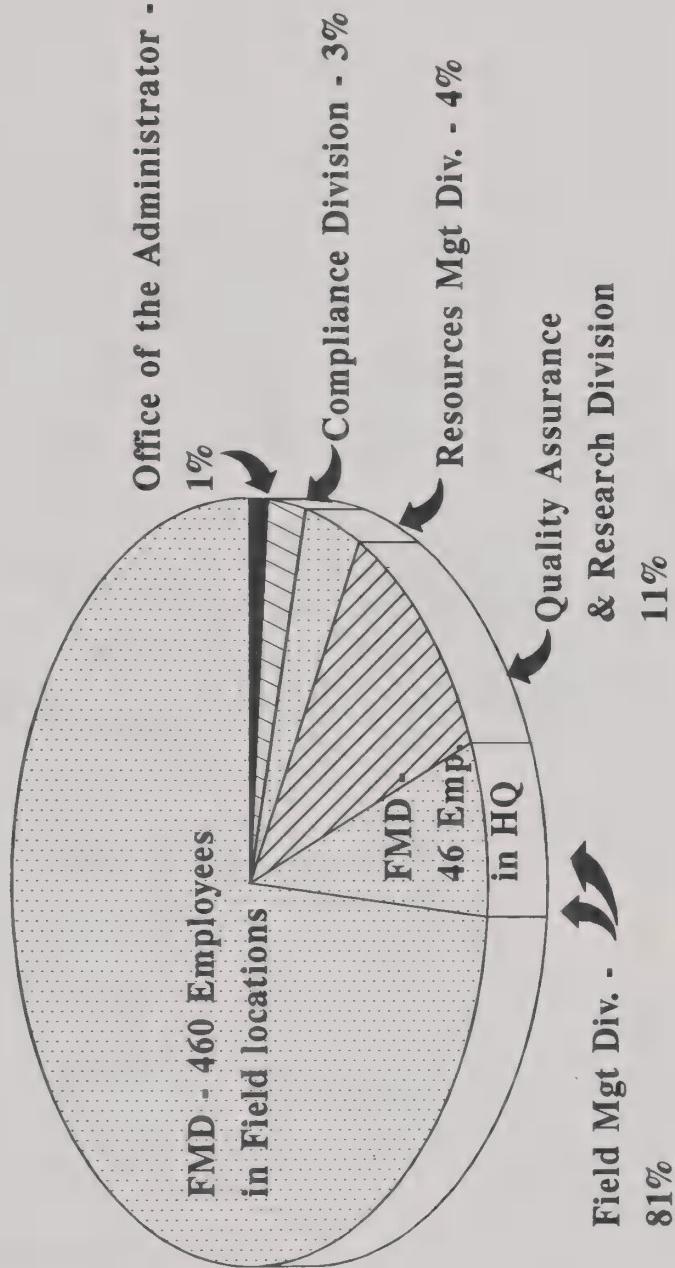
The **International Monitoring Staff (IMS)** is part of the Office of the Administrator.
The IMS:

- monitors the quality and weight of grain shipments between origin and destination ports;
- prepares written or onsite responses to grain quality or weight complaints received through the Foreign Agricultural Service and other sources;
- briefs representatives of importing countries (agricultural officials, buyers, end users, and others), both in the U.S. and abroad, on the roles and responsibilities of FGIS; and,
- works closely with USDA sister agencies, the Food and Drug Administration, and USDA cooperator organizations to increase awareness of FGIS roles and responsibilities in the United States and abroad.

FGIS Field Offices

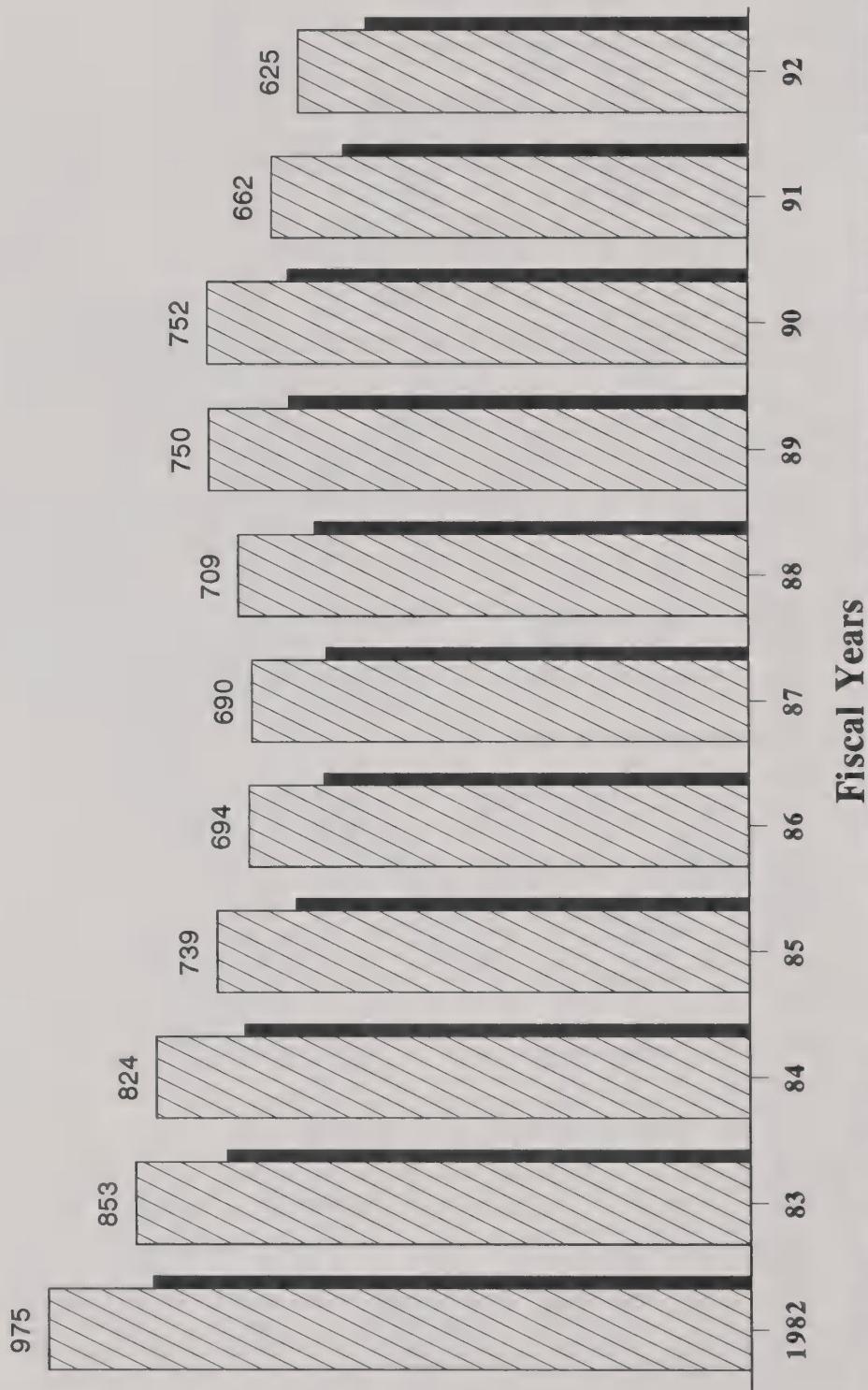
FGIS field personnel are located across the Nation, thus ensuring the availability of official inspection and weighing services anywhere in the United States. FGIS personnel also are located in eastern Canada to provide inspection of U.S. grain at Canadian ports.

FGIS Permanent Full-Time Employees, FY 1991



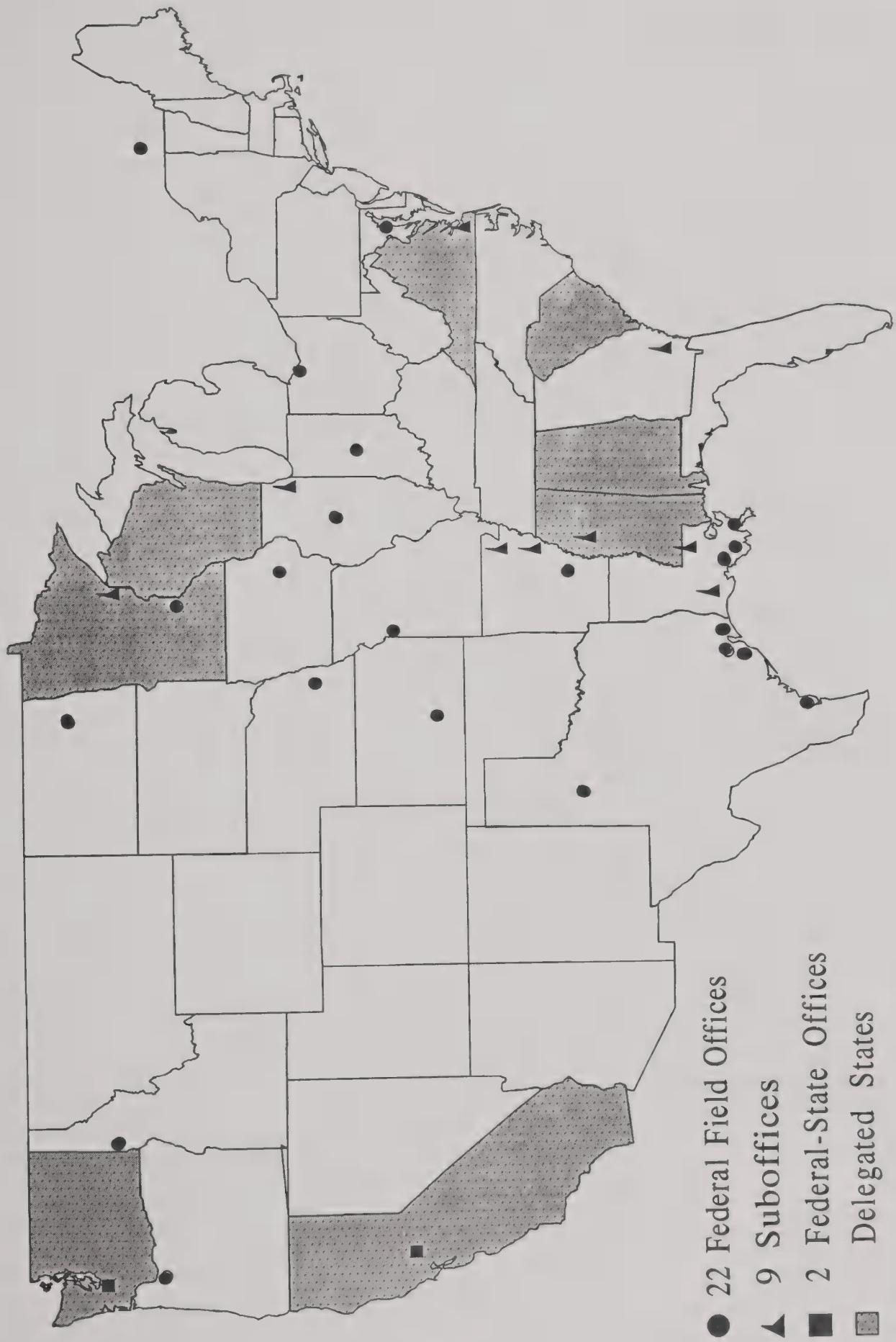
Federal Grain Inspection Service Full-Time Permanent Employment, FY 1982-92

Number of Employees



Federal Grain Inspection Service

Performance of Weighing and Inspection Services



Inspection and Weighing

Adding Water to Grain

During 1992, FGIS received complaints from foreign and domestic grain merchants about potential grain quality degradation due to the application of water to grain. Complainants contended that the primary purpose of applying water is to increase the weight of the grain.

To prevent the misuse of additives, FGIS proposed revising the regulations under the Act to require that a statement be shown on all official export inspection and weight certificates whenever additives (except fumigants applied for insect control) are applied to export grain, at export port locations. Certification would apply whether the additives are applied before or after sampling and weighing. FGIS proposed that the statement describe the type of additive applied, the point in the handling process where it was applied, and the specific reason for application.

Aflatoxin Testing

FGIS revised the regulations under the Act to implement mandatory aflatoxin testing of corn exported from the United States. The mandatory testing became effective on February 21, 1992.

Aflatoxin Action with FDA

On April 22, 1992, FGIS, in conjunction with the Food and Drug Administration (FDA), issued a memorandum advising grain handling establishments that the blending of aflatoxin-contaminated corn with uncontaminated corn is unlawful. FDA will initiate appropriate legal action against shippers and owners performing this practice.

Canadian Grain Commission Accord

On October 7, 1991, FGIS and the Canadian Grain Commission (CGC) signed a revised Memorandum of Understanding (MOU). The MOU allows the CGC to station CGC employees, or agents appointed by the CGC, at ports in the United States to perform stowage examinations on carriers receiving Canadian grain; perform official inspections in accordance with the Canada Grain Act; analyze Canadian grain for non-visual factors which reflect end-use quality; sample Canadian grain for phytosanitary inspections; and supervise weighing, in accordance with the Canada Grain Act. CGC already allows FGIS to perform these functions for U.S. grain in Canadian ports.

Field Automation

FGIS continued integrating modern technology into the grain inspection and weighing services provided in the field. In fiscal year 1992, FGIS developed guidelines to automate the supervision of official weighing. The Agency also is developing methods to automate the Cu-Sum statistical ship loading plan. To date, two export elevators are installing automated weighing equipment and five other elevators are planning to automate.

Official Commercial Inspection Service

Between September 1, 1991, and January 31, 1992, FGIS conducted a pilot study to determine the feasibility of offering a "flexible" inspection service that would allow users to tailor grain inspection services, including the issuance of certificates, to fit their individual needs. The service allowed users to select specific features from other "complete" services, or modify the current inspection procedures, without sacrificing inspection quality. Study findings indicated that State and private official agencies could provide a "flexible" service and, more importantly, that the grain industry wanted and would use such a timely and cost-effective service.

On May 1, 1992, FGIS implemented the new "flexible" Official Commercial Inspection Service (OCIS). The service facilitates the marketing of grain at locations where other kinds of official inspection services are too costly or time-consuming. Like other official services, OCIS provides an impartial assessment of grain quality (grade, official factors, and other criteria) by FGIS licensed or authorized inspectors, using FGIS approved and checktested equipment. Unlike other official services, it allows applicants for inspection -- working with FGIS or an official agency -- to modify the sampling and inspection procedures to fit their individual needs. To foster additional savings, the service allows issuance of certificates and retention of file samples on an optional basis, upon request.

FGIS projects that the OCIS will increase the number of trucklot inspections performed by State and private official agencies by as much as 25 percent within 3 years, from 360,452 trucklots in fiscal year 1991 to 450,000 in fiscal year 1994. Hopper carlot inspections should increase by about 10 percent during the same period, from 944,246 in fiscal year 1991 to 1 million in fiscal year 1994. The number of trucklot and hopper carlot inspections performed by FGIS should increase by about the same percentage.

Part 800 Review

In compliance with requirements to periodically review existing regulations, and as part of the President's regulatory review program, FGIS plans to propose amendments to the regulations under the Act to more accurately address current inspection, weighing, and marketing practices. Several revisions under consideration would substantially reduce the information collection and recordkeeping burden of grain industry and official inspection personnel. FGIS also is rewriting and reorganizing the regulations to make them easier to use and understand. All revisions will promote a better understanding of the policies and procedures governing the national inspection and weighing system.

Railroad Track Scale Testing Equipment

During fiscal year 1992, FGIS developed specifications for and purchased a railcar specially outfitted with material handling equipment and 100,000 pounds of standard test weights to test official railroad track scales. The new railcar, FGIS' third railroad track scale test car, is servicing the central United States. The purchase of the new test car was financed by excess funds accumulated annually by the Association of American Railroads, which funds a major portion of the FGIS Track Scale Testing Program.

Soybean Monitoring Projects

FGIS participated in two collaborative studies to collect information about changes in soybean quality between origin and destination. The first was with the Japan Oilseed Processors Association and the Japan Oilstuff Inspectors' Corporation; the second was with the European Community Seed Crushers' and Oil Processors' Federation. The results of both studies, which should be available in 1993, will help the participants address Japan's and Western Europe's past concerns about foreign material in U.S. soybeans.

Inspection Program Data

Item	Fiscal Years		
	1990	1991	1992
Quantity of Grain Produced* (MMt) 1/	335.1	363.9	333.2
Quantity of Grain Officially Inspected (MMt)			
Domestic	176.7	159.9	143.9
Export by FGIS	87.4	77.4	85.6
by Delegated States	26.9	17.5	17.8
Total	291.0	254.8	247.3
Number of Delegated States/Official Agencies	76	73	72
Number of Official Original Inspections and Reinspections			
FGIS	186,470	154,742	146,366
Delegated States/Official Agencies	2,608,501	2,267,962	2,217,960
Total	2,794,971	2,422,704	2,364,326
Number of Wheat Protein Inspections			
FGIS	53,813	51,582	47,697
Delegated States/Official Agencies	458,563	446,070	460,010
Total	512,376	497,652	507,707
Number of Soybean Protein and Oil Inspections			
FGIS	10,502	10,089	11,444
Delegated States/Official Agencies	2,360	3,423	4,344
Total	12,862	13,512	15,788
Number of Official Inspection Supervisions			
Field Office Grain Inspection Supervisions	42,749	37,340	42,000*
BAR Grain Inspection Supervisions 2/	10,047	10,113	9,812
Rice Free Fatty Acid	380	372	552
Soybean Protein and Oil	2,914	2,160	1,877
Sunflower Oil	1,862	1,641	2,352
Wheat Falling Number	308	147	69
Wheat Protein 3/	45,124	39,412	46,650
Aflatoxin	--	1,054	1,679
Number of Grain Appeals			
Field Offices	8,195	6,320	5,000*
BAR	550	469	569
Number of Aflatoxin Inspections	60,867	48,317	59,372
Quantity of Rice Inspected (MMt) (milled basis)	3.7	3.1	3.9

* Estimate.

1. Million metric tons.

2. Board of Appeals and Review.

3. Includes field office and QARD samples.

Weighing Program Data

Item	Fiscal Years		
	1990	1991	1992
Official Weight Certificates Issued			
FGIS			
Class X*	99,217	84,653	80,849
Class Y**	<u>23,924</u>	<u>30,283</u>	<u>25,495</u>
Total	123,141	114,936	106,344
Delegated States/Official Agencies			
Class X*	47,350	36,599	37,214
Class Y**	<u>185,450</u>	<u>131,561</u>	<u>139,316</u>
Total	232,800	168,160	176,530
Exported Grain Weighed (MMt)			
FGIS	85.6	75.5	85.6
Delegated States	<u>26.9</u>	<u>17.5</u>	<u>17.8</u>
Total	112.5	93.0	103.4
Number of Certified Scales in Service			
Export Elevators	380	312	321
Number of Railroad Track Scales Tested	131	124	138

* Class X involves 100 percent supervision.

** Class Y involves a minimum of 25 percent supervision.

Research and Development

Grain Odor

Musty, sour, and commercially objectionable foreign odors are important grain grading factors. FGIS continues to participate in two separate collaborative efforts with the Agricultural Research Service (ARS) on odor detection in grain.

Data from an expert sensory panel study at Kansas State University's Sensory Analysis Center, and from chemical analyses carried out by ARS chemists, allowed ARS to establish threshold levels for several compounds that cause many objectionable odors in grain. In fiscal year 1993, samples from market channels will be chemically analyzed using a prototype odor detection instrument. The grain then will be classified, using the threshold levels, as either "sound" or "sample grade." Results will be compared with those obtained by the current subjective official inspection system. In addition, data from the expert sensory panel will be used to develop specific odor standard references for inspectors in the field.

In a second project, ARS developed a sample holder that prevents inspectors from inhaling particulates, such as dust and mold spores, when smelling grain samples. Preliminary tests by the FGIS Board of Appeals and Review indicate that this device may enhance the ability of inspectors to detect objectionable odors in grain. Because it may be impossible to objectively detect all objectionable odors in grain, an instrument, such as the sample holder, that enhances the safety of inspectors is critical. In fiscal year 1993, the holder will be tested in the inspection system.

Image Analysis

Image analysis systems, which use relatively inexpensive, fast computers and high-quality cameras, are revolutionizing many industries, especially those involving inspection. FGIS is supporting research to determine if this technology can be applied in the official inspection system.

Image analysis systems may enable FGIS to shift from current subjective inspection factors to more reliable, efficient, and reproducible objective criteria. For example, image analysis systems can correctly identify stress cracks in corn, mold-damaged soybeans, and different milling levels in rice. Image analysis techniques also can help inspectors differentiate between various types of small seeds. For instance, the enlarged images provided by image analysis systems facilitate visual differentiation between canola, rapeseed, and mustard seeds.

Current research is focusing on determining the visual information needed to make inspection decisions, and on how this information should be analyzed to produce results similar to those provided by an inspector. FGIS also is investigating the use of electronic image display tools for procedure manuals and pictorial examples of damage. These activities will continue in fiscal year 1993.

Insect Infestation

FGIS continues to support the development of a test kit to detect insect infestation in grain and other commodities. Previously, commercially available test kits required 3 hours per assay. In fiscal year 1992, a simplified test kit was developed that requires only 15 minutes per assay, and detects both live and dead infestation. Studies are underway to compare the results from this kit with fragmentation counts, the number of insect-damaged kernels, and the number of kernels infested as detected by X-ray analysis.

FGIS also is supporting ARS' development of acoustical detectors that measure the total amount of both hidden and visible live infestation in grain and other commodities. Earlier prototypes of this instrument detected infestation levels of 1 insect per 1,000 grams of samples, but incorrectly counted the number of insects present when the insects were proximate in the sample. The instrument is being modified to solve this problem. FGIS will test new prototypes in 1993.

Mycotoxins Other Than Aflatoxin

Mycotoxins are naturally occurring toxic substances produced by a wide variety of molds and fungi. Aflatoxins are the most widely known mycotoxins, but others also occur in grain. An FGIS collaborative study is underway to determine if test kits for zearalenone and deoxynivalenol (vomitoxin) are suitable for use by inspectors in the field. In addition, in fiscal year 1992, the Agency requested information on commercially available test kits for fumonisin, a known toxin to horses and swine, and a potential human carcinogen.

Pesticide Residue Analysis

FGIS is surveying U.S. wheat samples for the presence of 19 different pesticide residues. Pesticides are being extracted from samples using carbon dioxide with state-of-the-art supercritical fluid extraction techniques. To date, FGIS has analyzed approximately 180 samples of wheat, representing all of the major classes, from the domestic market. Results show that 11 of the 19 residues were not found in any of the samples, 5 of the residues were found in less than 1 percent of the samples, methoxychlor (Marlate) was present in 7 percent of the samples, chlorpyrifos methyl (Reldan) was present in 45 percent of the samples, and malathion was present in 83 percent of the samples tested. All residue concentrations detected were well below Environmental Protection Agency tolerance levels.

FGIS also has initiated a corn pesticide survey for 21 target pesticides. Both surveys will continue in fiscal year 1993.

Single Kernel Moisture Analysis in Corn

In normal years, newly harvested corn is frequently blended with dry, stored corn from preceding years before it is shipped to export elevators. In wet seasons, the moisture content of newly harvested corn may be much higher than that of the stored corn. In this case, if the newly harvested and stored corns are not mixed well, wet spots may occur within lots that lead to spoilage during shipment.

To determine how moisture migrates within corn shipments during transit, FGIS placed single kernel moisture testers in five locations in two major corn marketing channels. During the first 16 weeks of operation, 1,200 corn samples were analyzed. Nineteen barges were tested at origin; 9 of those also were tested at destination. In addition, nine rail cars were tested at origin; eight of those were tested at destination. This study will continue into fiscal year 1993. The final results will help FGIS determine the ranges of single kernel moisture levels in the U.S. corn market, how the ranges change during shipment, and whether single kernel moisture analysis should be offered by the official inspection system.

Sprout Damage

Sprouting in wheat can damage the starch contained in the kernel and, as a result, may decrease baking quality. Sprout damage can be measured using Falling Number, Stirring Number, or amylograph methods. The Falling Number test measures the amount of time required for a metal plunger to fall through a viscous starch solution made from a ground sample of wheat. The Stirring Number test, developed in Australia, measures the resistance to stirring a propeller in a similar solution. The amylograph is a measurement of the amount of resistance generated as the dough is mixed.

Flour users generally prefer amylograph values since they are more indicative of baking properties. However, this test is impractical for the official system because amylograph measurements require that the wheat first be milled into flour. Therefore, to meet the needs of end users, the official system must determine whether the Falling Number or Stirring Number test better predicts amylograph results.

Studies during fiscal year 1992 indicate that the Falling Number test may better predict amylograph results. In addition, FGIS identified a procedural modification that significantly reduces the effects of barometric pressure on Falling Number values and produces a more reliable test.

Standardizing Commercial Grain Inspection Equipment

FGIS provided technical leadership in a cooperative effort with the National Institute of Standards and Technology (NIST) and the National Conferences on Weights and Measures to develop an equipment testing program for grain moisture meters and near-infrared (NIR) wheat protein analyzers used in commercial grain inspection. During fiscal year 1992, two technical sector meetings and two moisture meter subcommittee meetings were held to develop design specifications and type evaluation test procedures.

The technical sectors expect to have a testing program for grain moisture meters in place by the fall of 1993. Development of the NIR wheat protein analyzer test program should be completed the following year. FGIS plans to continue supporting these programs by serving as a NIST-certified National Type Evaluation Program (NTEP) testing and calibration laboratory.

Wheat Classification

FGIS, ARS, the Agricultural Marketing Service (AMS), and the industry-sponsored Wheat Classification Working Group are continuing a collaborative effort to develop a wheat classification system based on objective test results rather than kernel morphology.

In 1992, the single kernel tester produced by the ARS Grain Marketing Research Laboratory in Manhattan, Kansas, was further refined and two commercial prototype instruments were built. These instruments provide data on kernel size, moisture content, and weight, as well as single kernel hardness at a rate of approximately 100 kernels per minute. FGIS currently is testing these instruments under different temperature and humidity conditions.

In fiscal year 1993, FGIS will analyze approximately 6,000 wheat samples from the 1992 crop using these instruments and near infrared instruments. The data will be used to refine the proposed wheat classification system, which is mainly based on hardness values.

Because the hardness scale is established using specific reference samples, a means of making these samples available to the industry world-wide is needed. FGIS currently is developing a memorandum of understanding with the NIST, which has agreed to distribute standard hardness reference samples supplied by FGIS.

Standards and Procedures

Codex Alimentarius Commission

FGIS continues to participate in the Codex Alimentarius Commission Committee on Cereals, Pulses, and Legumes. The committee has established international standards for wheat flour, durum wheat flour, Durum semolina, maize, whole maize meal, degermed maize meal, maize grits, certain pulses, sorghum grains, and sorghum flour. The Committee also has drafted standards for rice, wheat, Durum wheat, and peanuts. These standards were discussed at the committee's October 1992 session in Washington, D.C.

Grain Standards

FGIS implemented U.S. Standards for Canola on February 28, 1992. This was the first new standard established since 1984.

FGIS prepared final rules for the sorghum, wheat, and soybean standards. Development of these final rules included evaluations of 29 comments on the sorghum standards, 28 comments on the wheat standards, and 1,770 comments on the soybean standards. Publication of these final rules is expected in fiscal year 1993.

FGIS also initiated a general review of the barley standards in December 1991, by preparing and distributing a discussion paper to the grain industry. The paper summarizes areas of concern and solicits comments from producers, trade associations, processors, maltsters, brewers, handlers, and merchandisers. The FGIS Advisory Committee and the Grain Quality Workshops also were informed of the Agency's review of the barley standards. FGIS plans to propose changes to the barley standards during fiscal year 1993.

Rice Standards

On December 2, 1991, FGIS implemented a special grade for glutinous rice. In the January 22, 1992, *Federal Register*, FGIS published an advance notice of proposed rulemaking to solicit public comment regarding a general review of the rice standards. The review ensures that the rice standards serve their intended purpose, are clearly written, and are consistent with FGIS policy and authority. Specifically, FGIS solicited comments regarding the need to: (1) establish standards for edible brown rice, (2) establish a special grade for aromatic rice, (3) eliminate the class Screenings milled rice, (4) revise the definitions of the classes of rough rice, and (5) revise the definitions of the classes Second Head, Screenings, and Brewers milled rice. Based on the comments received, in August 1992, FGIS initiated action to propose changes to the rice standards.

Beans, Peas, and Lentils Standards

FGIS announced a general review of the U.S. Standards for Beans, Whole Dry Peas, Split Peas, and Lentils in the January 22, 1992, *Federal Register*. In the August 28, 1992, *Federal Register*, FGIS concluded that the review of the standards indicated that the standards meet the needs of producers, warehouse managers, shippers, and all others who handle or market these commodities. Although changes are not planned for the standards, FGIS is soliciting further public comments before making a final decision.

Compliance Activities

Compliance is defined as conformance with all requirements and procedures established by statute, regulation, instruction, or directive to ensure that the managerial, administrative, and technical functions of FGIS are accomplished effectively.

FGIS ensures, through reviews, evaluations, and, as necessary, enforcement actions, that the Act, applicable provisions of the AMA, and regulations, procedures, and policies issued under the statutes are implemented properly and uniformly.

Management Control Program

FGIS established and maintains, at all organizational levels, a checks-and-balances system of program, accounting, and administrative control. Agency programs and activities are reviewed against standards established by the General Accounting Office to ensure that sufficient management controls exist; that assets and resources are safeguarded against theft, fraud, waste, and abuse, and are accounted for properly; that expenditures comply with applicable laws and regulations, and are accounted for properly; and that operations comply with laws and regulations, and promote operational economy and efficiency.

The program allows FGIS to effectively evaluate procedural conformance and operational efficiency nationwide, determine the adequacy of control measures, and identify vulnerabilities that may deter accomplishment of the Agency's mission, or that may affect the integrity of the official grain inspection and weighing system.

In fiscal year 1992, FGIS completed the first 5-year review cycle of all of its programs, in accordance with USDA's management control program. No material weaknesses were identified. FGIS developed approximately 200 corrective action plans to address, and ensure timely resolution of, all identified noncompliances and problem areas.

Compliance Reviews

FGIS conducted compliance reviews of 7 field office circuits and 10 official agencies to evaluate management effectiveness and procedural compliance. Most field office circuits were found to be well managed, performing satisfactorily, and meeting FGIS' mission. Some procedural problems were identified, and these have been or are being corrected. Followup compliance reviews and onsite visits by FGIS personnel ensure resolution of all problems.

FGIS also conducted special reviews of an additional seven official agencies to evaluate areas of concern specific to each agency; and, it reviewed the contract sampler program at six official agencies to assess nationwide uniformity. The special reviews identified administrative and procedural problems that FGIS will address in fiscal year 1993.

During all compliance reviews, FGIS interviews applicants for service and official personnel to ensure that there is no discrimination in the delivery of official services. No instances of discrimination in service were identified during fiscal year 1992.

Management Evaluation

Under the AMA, FGIS provides a permissive program to inspect, certify, and identify the class, quality, quantity, and condition of rice. In fiscal year 1992, FGIS completed a management evaluation of the rice inspection program and the operation of the total oil and free fatty acid (TOFFA) laboratories. The evaluation was designed to determine whether the national program is procedurally and operationally effective, efficient, and in compliance with laws, regulations, and policies.

The evaluation found that the program meets the needs of the rice industry. It also found that procedural consistency and uniformity among FGIS offices need to be improved. FGIS is developing corrective action plans to address areas of noncompliance and is monitoring the program to ensure that problems are resolved.

Alleged Violations and Case Activity

At the beginning of fiscal year 1992, 17 cases involving alleged violations of the Act and the AMA were pending further action. During the fiscal year, 19 cases were opened and 24 cases were closed, leaving 12 cases pending at the close of fiscal year 1992.

Alleged violations during fiscal year 1992 included: deceptive grain handling and loading practices; improper performance of official duties, including improper sampling and inspection procedures; false weighing of grain; altering official documents; interfering in the performance of official duties; exporting without obtaining official inspection and weighing; failing to obtain official weighing; adulterating grain; and failing to demonstrate proficiency by a licensee.

During fiscal year 1992, FGIS conducted one onsite investigation; one case was referred to the Food and Drug Administration; and seven cases were referred to the Office of Inspector General (OIG). OIG accepted six of the cases. FGIS personnel assisted OIG in conducting onsite investigations of two of the six cases referred. The remaining cases were addressed by evaluating information gathered and submitted by field personnel.

Enforcement Actions

Administrative action was taken on 19 of the 24 cases closed. Five (5) were closed due to insufficient evidence.

Two cases involving allegations of improper sampling and inspection procedures resulted in significant administrative actions. In one case, FGIS issued cautionary letters to the management of two grain elevators, and a chief inspector resigned and sold his stock in the official agency, thus removing the official agency from the national system. In the second case, one licensee voluntarily canceled his license, another's was suspended for 6 months, and a chief inspector sold his stock in his official agency. That official agency remains in the system, but is under new management.

FGIS also assessed a \$15,000 civil penalty against a grain firm for engaging in deceptive grain handling/loading practices.

Official Agency Designations

Seventy-two State and private agencies are designated to provide official services at interior locations. Of these, 8 State agencies also are delegated to perform official inspection and weighing services at export locations. Under triennial renewal procedures, 26 agency designations automatically terminated in fiscal year 1992. After thorough evaluations, all were renewed.

Conflicts of Interest

At the beginning of fiscal year 1992, all five designated agencies that were granted discretionary conflict-of-interest waivers were operating without significant problems.

FGIS evaluated 12 conflict-of-interest situations involving licensed inspection personnel. Exceptions, which are granted on the basis of an individual's agreement to comply with specified conditions, were granted to nine; one situation did not constitute a conflict of interest; and, two licensees were denied exceptions.

**Registration To
Export Grain**

During calendar year 1992, FGIS issued 89 Certificates of Registration to firms that export grain for sale, or that handle, weigh, or transport grain for sale in foreign commerce.

FGIS developed a brochure outlining registration requirements that was distributed to FGIS field offices, the Foreign Agricultural Service, the North American Export Grain Association, the National Grain & Feed Association, and the Grain Elevator and Processing Society. The brochure will be used during the annual renewal process and to respond to inquiries about the registration program.

**Overview of
Compliance Activities
Fiscal Year 1992**

Item	Fiscal Years		
	1990	1991	1992
Agency Delegations and Designations	76	74	72
Designations Renewed	22	26	26
State Delegations at Export Port Locations	8	8	8
Registration Certificates Issued to Grain Firms	87	86	89
Licensees:			
Inspectors	710	680	681
Weighers	112	125	106
AMA Inspectors	92	87	88
Total Samplers/Technicians (approximate)	2,310	2,205	2,121
USGSA Samplers	*	1,500	1,460
AMA Samplers	*	705	652

* Data became available in fiscal year 1991.

International Relations

Complaints from Importers

In fiscal year 1992, FGIS received 19 quality and 2 quantity complaints from importers on grains inspected under the Act. The complaints involved 46 lots loaded aboard 34 vessels.

Importers' complaints in fiscal year 1992 involved approximately 1.0 million metric tons, or about 1.0 percent by weight, of the total amount of grain exported during the year. The 15 quality complaints and 2 quantity complaints FGIS received in fiscal year 1991 represented approximately 0.3 percent of the total tonnage of grain exports.

Importers' Complaints 3-Year Summary

	Fiscal Year 1990	Fiscal Year 1991	Fiscal Year 1992
Quality Complaints	22	15	19
Quantity Complaints	0	2	2
Total	22	17	21
Export Volume Inspected (million metric tons)	112.3	94.8	103.0
Complaint Tonnage (million metric tons)	1.2	0.3	1.0
Complaint Percentage	1.1	0.3	1.0

Summaries of complaints from importers, briefings presented to visiting trade and government teams, and FGIS activities involving international travel during fiscal year 1992 appear on the following pages.

**Summary of Complaints
Reported by Importers
on Inspection and
Weighing
Fiscal Year 1992**

	Grain	Number of Complaints	Nature of Complaint
Africa			
Zambia	Corn	1 1	Presence of pesticide residue Presence of fungi
Asia			
Japan	Wheat	1 1 1	Weight Presence of stones Residual gas from fumigant
Malaysia	Corn	1	Heat damage
PRC	Wheat	1	Protein
Sri Lanka	Wheat	1	Weight Dockage
Latin America			
Colombia	Wheat	1	Test weight, foreign material, protein
Mexico	Sorghum	1	Infestation
	Soybeans	1	Foreign material
Nicaragua	Wheat	1	Test weight, foreign material, dockage, shrunken and broken kernels
Venezuela	Corn	1	Damaged kernels, broken corn and foreign material
		1	Broken corn and foreign material
Near East			
Algeria	Wheat	1 1	Presence of treated seeds Infestation
Egypt	Corn	1	Infestation, broken corn and foreign material
Saudi Arabia	Corn	1	Broken corn and foreign material
Yemen	Wheat	1	Infestation
Pacific			
New Zealand	Wheat	1	Protein
TOTAL		21	

**Summary of Briefings
with Visiting Trade and
Governmental Teams,
Fiscal Year 1992**

	Number of Teams
Africa	
Morocco	1
South Africa	3
Asia	
Bangladesh	1
India	2
Japan	8
Korea	3
People's Republic of China	3
Philippines	1
Europe	
Belgium	1
CIS	3
Cyprus	2
Denmark	1
European Trade Team (Israel, Portugal, The Netherlands, United Kingdom)	1
Hungary	1
Israel	1
Poland	2
Russia	1
United Kingdom	3
Latin America & Caribbean	
Argentina	1
Brazil	1
Colombia	1
Dominican Republic	1
Mexico	1
Venezuela	1
Near East	
Egypt	1
North America	
Canada	1
TOTAL	46

**Summary of Activities
Involving International
Travel, Fiscal Year 1992**

Purpose	Number	Country Visited	Dates
1. To participate in a marketing conference for soybean importers sponsored by the American Soybean Association, and to meet with Japan Oilseed Processors Association to discuss data collected from a monitoring activity.	1	Japan	11/30-12/05/91
2. To monitor the quality of soybeans in the first of six vessel holds involved in a monitoring study with the European Community (EC) Seed Crushers' and Oil Processors' Federation (FEDIOL).	1	The Netherlands	11/30-12/06/91
3. To advise local officials on grain inspection and marketing issues, at the request of a U.S. AID contractor.	1	Tunisia	01/05-01/18/92
4. To investigate a rice quality discrepancy at the request of the exporter.	1	Guatemala	01/14-01/17/92
5. To meet with local officials to discuss Mexico's inspection requirements for U.S. grain exports.	1	Mexico	01/26-01/28/92
6. To review soybean inspection procedures at a Dutch laboratory and monitor the quality of a U.S. soybean cargo with the EC FEDIOL.	1	Belgium, The Netherlands	02/22-03/05/92
7. To make a presentation at the U.S.-Canada Farm Leaders' Grain Industry program at the request of the Canadian International Grains Institute.	1	Canada	03/08-03/11/92
8. To participate in CODEX Alimentarius Commission proceedings.	1	The Netherlands	03/21-03/29/92

**Summary of Activities
Involving International
Travel, Fiscal Year 1992,
continued**

Purpose	Number	Country Visited	Dates
9. To visit the Canadian Grain Commission and to review grading procedures.	1	Canada	04/25-05/01/92
10. To participate in the 27th International Grain Industry Program at the request of the Canadian International Grains Institute.	1	Canada	06/09-06/11/92
11. To present a paper at the International Conference on Controlled Atmosphere and Fumigation in Grain Storages.	1	Canada	06/10-06/13/92
12. To visit FGIS field offices and to review export operations in cooperation with the Canadian Grain Commission.	1	Canada	07/06-07/10/92
13. To participate in a symposium on grain standards and inspection procedures sponsored by the Food and Agriculture Organization (FAO) of the United Nations.	1	Guatemala	07/22-07/24/92
14. To conduct wheat grading seminars at the request of U.S. Wheat Associates.	1	Mexico, Guatemala	08/01-08/14/92

Grain Dust Explosion Data

FGIS receives information on grain dust explosions through the cooperation of universities, insurers, trade groups, FGIS personnel, and a news clipping service. FGIS does not investigate grain dust explosions, and the public sector is not required to report explosions to FGIS.

**Summary of Reported
Grain Dust Explosions**

Facility	Location	Date	Injuries	Fatalities
Monona Co-op	Monona, IA	10/10/91	0	0
Klute Farm Grain Bin	Blanchard, IA	12/06/91	0	0
Farmers Coop Exchange	Prairie City, IA	06/09/92	0	0
Austwell Farmers Coop	Austwell, TX	08/07/92	1	0
Agri Industries	McGregor, IA	08/10/92	3	0
Lake Preston Coop	Lake Preston, SD	08/28/92	2	1
Consol Grain & Barge Co.	Mound City, IL	08/25/92	0	0

	1990	1991	1992
Number of Explosions	18	16	7
Number of Injuries	8	9	6
Number of Deaths	0	1	1

Budget Information

Status of Fee-Supported Accounts
Fiscal Year 1992

Program	Revenue 9/30/92	Obligations 9/30/92	Profit/(Loss) 9/30/92	Unobligated Funds 9/30/92
U.S. Grain Standards Act				
Inspection and Weighing	\$19,074	\$18,814	260	1,134
Canadian Operations	264	299	(35)	(615)
Official Agencies	1,577	1,433	134	4,633
Registration	16	9	7	39
USGSA Subtotal	20,931	20,564	367	5,191
Agricultural Marketing Act of 1946				
Rice Inspection	2,870	3,347	(477)	(527)
Commodity Inspection	5,159	5,338	(179)	4,764
AMA Subtotal	8,029	8,685	(656)	4,237
FGIS Total Fiscal Year 1992	28,960	29,249	(289)	9,429

Dollars in Thousands

Accounting History of FGIS
Appropriated and Fee Supported Funds

Description	FY 1985 Actual	FY 1986 Actual	FY 1987 Actual	FY 1988 Actual	FY 1989 Actual	FY 1990 Actual	FY 1991 Actual	FY 1992 Actual
Appropriated Funds								
Budget Authority	6,994	6,702	6,826	7,020	8,115	8,185	9,706	11,397
Total Obligations	6,676	6,396	6,694	6,806	7,496	8,017	9,527	11,232
Difference	318	306	132	214	619	168	179	165
Fee Supported Funds								
Fund Limitation	36,856	36,856	36,856	36,856	36,856	36,856	37,164	40,176
Total Obligations	31,467	29,558	29,517	31,094	34,795	33,943	30,456	29,249
Total Revenue	31,731	27,506	32,382	34,538	34,472	30,670	29,098	28,960
Profit/(Loss)	264	(2,052)	2,865	3,444	(323)	(3,273)	(1,358)	(289)
Total Obligations	38,143	35,954	36,211	37,900	42,291	41,960	39,983	40,481
Total Ceiling	43,850	43,558	43,682	43,876	44,971	45,041	46,870	51,573

Dollars in Thousands

11/2/92

FGIS Expenditures Supported by Users' Fees and Appropriations

Millions of Dollars

